

SOFTWARE QUALITY ASSURANCE



Jabatan Digital Negara
Kementerian Digital

TB
TESTBITS

Optimizing Public Sector Projects
with Modern SQA Tools and
Frameworks

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**“Quality is everyone's
responsibility.”**

W. Edwards Deming





01

INTRODUCTION

The purpose and impact of SQA

Norhayati Suzari

- Founder and Managing Director of Testbits
- Over 22 Years in Software Testing
- Management Experience of over 15 years, with 8 years as founder of a QA company
- Accredited HRDF, ISTQB, IREB and TMMi Trainer
- TMMi Assessor



PURPOSE

Core roles and functions of SQA



02 Enhanced Product Quality

To ensure purpose 1, many types and levels of testing will be executed, enhancing overall quality

04 Risks Mitigation

Testing is part of risk mitigation plan. Our test result will give an overall view of the product risks. Mitigation plan can be crafted to avoid or absorb the impact of the risks



01 Reliability and Functionality

Ensure the system is built as intended and consistently working on expected levels



03 Compliance and Regulatory

Some agencies have specific business rules or regulations. QA make sure that any compliance and regulations are part of the requirements to validate in the system



05 Delivery and Fulfilment

QA can help project team to understand the level of quality and risks. It assists in making the right plans and decisions. Action taken should cover the risks and its impact to clients.



02

SQA FRAMEWORK

Foundational framework for Government projects



> **31%**

**of software projects are
cancelled before completion**

> 57% exceed their budget by 189%

reference

<https://www.betabreakers.com/software-survival-in-2024-understanding-2023-project-failure-statistics-and-the-role-of-quality-assurance/>

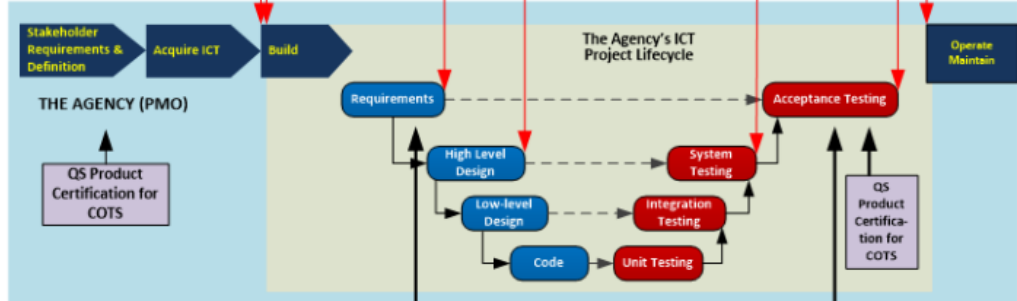


Engagement Phase: ICT Project Lifecycle (Ground-Up, Legacy Disposed, Legacy Enhanced)

Part I: Quality Gates

TMO:
Provides IV&V reports at each Quality Gate (QG)

Part II: PMO



Part III: TMO

Software Test Teams:
Performs test across the lifecycle (Typical tests are in red)

Reference –

<https://sqa.jdn.gov.my/index.php/ms/garis-panduan/independent-verification-validation-iv-v>

IV&V

- ∂ To check if the product conforms to **design and technical specifications**
- ∂ Remove and **prevent defects**

VERIFICATION

Before the system is built

Document Review
(Static Testing)

VALIDATION

After the system is built

Web and Mobile Application
(Dynamic Tests ~
SIT, UAT, PAT)

- ∂ To check if the product **fulfills intended purpose** and solves intended problems
- ∂ **Remove defects**

Optimizing



Jabatan Digital Negara's

Framework



Rights to Quality

Understand your rights from internal and external stakeholders and set expectations up front



Quality Benchmarks

Agency to set your own quality benchmarks for Products, Vendors, and Processes

QUALITY BENCHMARKS

Test Framework
for Government ICT Projects

*Tanda Aras Kualiti
Produk/Sistem*

Processes

End-to-end

- System Test Lifecycle and activities
- Test Strategy
- Test Metrics for quantitative quality benchmark and predictability
- Benchmark for system performance based on available data
- Risk-based approach

Product

Quality Policy

- Compliance & Standard
- Reliability & Availability
- User-Centric Design
- Security & Data Integrity
- Low Maintenance
- Stakeholders Feedback & Collaboration

Vendors

Qualifying Criteria

- Qualifications and certifications
- Understanding on product quality
- Competencies matrix
- Performance in past projects

Qualifications
met **> 80%**

- <200 static test defects
- < 5% defects rejection
- < 20% defects leakage in UAT
- <5% progress variants
- Risk Management Plan

- Functional Test
- Performance Test
- Usability Test
- ST, UAT, PAT, FAT
- User Feedbacks
- Continuous Improvement
- 0% reusable setups

Product Benchmark

Functionality

- 100% requirements fulfilled & standard compliance
- 0 critical & high severity defects

Usability

- >80% user satisfaction index

Performance

- < 2 seconds loading time for 100% critical path
- Max load of 1000 concurrent user for < 2 secs



03

NEXT-GEN SQA TOOLS

Leveraging tools for efficiency and quality

EVOLUTION OF QA TOOLS

1



MANUAL

2



AUTOMATED

3



AI-Driven

Identifying Next Gen Tools

Next-gen SQA tools are designed to reduce manual effort, speed up testing cycles, and provide actionable insights to improve software quality

AI-driven Capabilities

- Self-Healing
- Predictive analytics
- Intelligent Test Generation

Data-driven Testing

- Data Analytics and Auto Reporting
- Traceability

User Experience

- Intuitive
- Quick onboarding

Low Code / No Code

Empowering non-technical users to create + execute automation tests

Agile, Devops and AIOps workflow

- Shift-left approach
- Real-Time collaboration for distributed teams

BUSINESS MODEL

Existing Tools

- Testrail
- HP ALM
- Zephyr
- Microsoft Project
- Trello
- Basecamp
- Mantis
- Bugzilla
- Redmine
- HP UTP
- Selenium
- Crazy Egg
- User Testing



Next Gen Tools

- Testim.io
- Practitest
- Jira Align
- Monday.com
- ClickUp
- Jira + AI plugin
- Bugzilla + AI Add-Ons
- Github Copilot
- AutonomIQ
- Mabl
- TestRigor
- PlaybookUX

BENEFITS

for Public Sector Projects



Test Activities

Enhanced speed and coverage of testing



Resources

Better resource allocation, allowing teams to focus on critical issues.



User Experience

Improved user experience and compliance through real-time monitoring and quality insights.



Test Maturity

Increase test maturity using data it collects, reusable scripts, and continuous test process improvement

04

CONCLUSION

Implementation suggestions

IMPLEMENTATION SUGGESTIONS



FOCUS ON SQA

Make Quality Assurance as a priority in software development



CAPACITY BUILDING

Increase BPTM's software testing capabilities through training, certification, conference + engagements with JDN or IV&V team



NEXT-GEN TOOLS

Leverage SQA next-gen tools to increase efficiency, improve test accuracy and help to improve maturity process



FRAMEWORK

Gradually improve the QA practices in the agency, eventually into a framework that would increase test maturity

A person in a blue suit is holding a white tablet. Above the tablet, there is a glowing blue network graphic with nodes and connecting lines. The background is a blurred office setting. The overall theme is technology and business.

THANK YOU

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